

1 CLAIMS:

2 1. A wireless communication system comprising:
3 at least one remote communication device configured to
4 communicate a return link wireless signal;

5 an interrogator including:

6 a communication station configured to receive the return link
7 wireless signal and to generate a return link communication signal
8 corresponding to the return link wireless signal;

9 communication circuitry coupled with the communication
10 station and configured to communicate the return link communication
11 signal; and

12 a housing remotely located with respect to the
13 communication station and including circuitry configured to receive the
14 return link communication signal from the communication circuitry and
15 to process the return link communication signal.

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17 2. The wireless communication system according to claim 1
18 wherein the communication station includes a low noise amplifier
19 configured to increase the power of the return link communication
20 signal.

1 3. The wireless communication system according to claim 1
2 wherein the housing includes adjustment circuitry configured to receive
3 the return link communication signal from the communication circuitry
4 and to adjust an electrical characteristic of the return link
5 communication signal.

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7 4. The wireless communication system according to claim 3
8 wherein the adjustment circuitry is configured to output the return link
9 communication signal at a substantially constant level.

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11 5. The wireless communication system according to claim 3
12 wherein the adjustment circuitry includes automatic gain control circuitry.

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14 6. The wireless communication system according to claim 5
15 wherein the automatic gain control circuitry is configured to monitor the
16 power of the return link communication signal and to adjust the power
17 of the return link communication signal responsive to the monitoring.

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19 7. The wireless communication system according to claim 1
20 wherein the communication circuitry includes a coaxial RF cable.

1 8. The wireless communication system according to claim 1
2 wherein the communication circuitry includes a plurality of wireless
3 transceivers individually coupled with one of the housing and the
4 communication station.

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6 9. The wireless communication system according to claim 1
7 wherein the remote communication device comprises a radio frequency
8 identification device.

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10 10. An interrogator of a wireless communication system
11 comprising:

12 a communication station configured to receive a return link
13 wireless signal and to generate a return link communication signal
14 corresponding to the return link wireless signal;

15 communication circuitry coupled with the communication station
16 and configured to communicate the return link communication signal;
17 and

18 a housing remotely located with respect to the communication
19 station and including circuitry configured to receive the return link
20 communication signal from the communication circuitry and to process
21 the return link communication signal.

1 11. The interrogator according to claim 10 wherein the
2 communication station includes a low noise amplifier configured to
3 increase the power of the return link communication signal.

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5 12. The interrogator according to claim 10 wherein the housing
6 includes adjustment circuitry configured to receive the return link
7 communication signal from the communication circuitry and to adjust an
8 electrical characteristic of the return link communication signal.

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10 13. The interrogator according to claim 12 wherein the
11 adjustment circuitry is configured to output the return link
12 communication signal at a substantially constant level.

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14 14. The interrogator according to claim 12 wherein the
15 adjustment circuitry includes automatic gain control circuitry.

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17 15. The interrogator according to claim 14 wherein the
18 automatic gain control circuitry is configured to monitor the power of
19 the return link communication signal and to adjust the power of the
20 return link communication signal responsive to the monitoring.

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22 16. The interrogator according to claim 10 wherein the
23 communication circuitry includes a coaxial RF cable.
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1 17. The interrogator according to claim 10 wherein the
2 communication circuitry includes a plurality of wireless transceivers
3 individually coupled with one of the housing and the communication
4 station.

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6 18. An interrogator of a wireless communication system
7 comprising:

8 a plurality of communication stations individually configured to
9 receive return link wireless signals and to generate return link
10 communication signals corresponding to the return link wireless signals;
11 and

12 a housing remotely located with respect to at least one of the
13 communication stations and including circuitry configured to receive the
14 return link communication signals from the communication stations and
15 to process the return link communication signals.

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17 19. The interrogator according to claim 18 wherein the housing
18 includes adjustment circuitry configured to adjust at least one electrical
19 characteristic of the return link communication signals.

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21 20. The interrogator according to claim 19 wherein the
22 adjustment circuitry includes automatic gain control circuitry.

1 21. The interrogator according to claim 18 further comprising a
2 plurality of communication circuits configured to communicate the return
3 link communication signals intermediate respective communication stations
4 and the housing.

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6 22. The interrogator according to claim 18 wherein the
7 communication stations are individually positioned to receive return link
8 wireless signals within one of a plurality of communication ranges.
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23. An interrogator of a radio frequency identification system comprising:

a communication station including:

an antenna configured to receive a return link wireless signal and to output a return link communication signal corresponding to the return link wireless signal; and

a low noise amplifier coupled with the antenna and configured to increase the power of the return link communication signal;

a coaxial RF cable coupled with the low noise amplifier of the communication station and configured to communicate the return link communication signal; and

a housing remotely located with respect to the communication station and including:

automatic gain control circuitry coupled with the coaxial RF cable and configured to adjust at least one electrical characteristic of the return link communication signal to output the return link communication signal at a substantially constant level; and

processing circuitry configured to receive the return link communication signal from the automatic gain control circuitry and to process the return link communication signal.

1 24. A method of communicating within a wireless communication
2 system comprising:

3 providing an interrogator and at least one remote communication
4 device;

5 communicating a return link wireless signal using the remote
6 communication device;

7 receiving the return link wireless signal within a communication
8 station of the interrogator;

9 generating a return link communication signal within the
10 communication station corresponding to the return link wireless signal;

11 communicating the return link communication signal from the
12 communication station using communication circuitry; and

13 receiving the return link communication signal from the
14 communication circuitry within a housing of the interrogator remotely
15 located from the communication station.

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17 25. The method according to claim 24 further comprising
18 amplifying the return link communication signal before the
19 communicating the return link communication signal.

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21 26. The method according to claim 24 further comprising
22 adjusting at least one characteristic of the return link communication
23 signal after the receiving the return link communication signal.

1 27. The method according to claim 26 wherein the adjusting
2 provides a return link communication signal having a substantially
3 constant level.

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5 28. The method according to claim 26 wherein the adjusting
6 comprises adjusting using automatic gain control circuitry.

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8 29. The method according to claim 24 wherein the providing at
9 least one remote communication device comprises providing a radio
10 frequency identification device.

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12 30. The method according to claim 24 further comprising
13 processing the return link communication signal after the receiving the
14 return link communication signal.

1 31. A method of communicating within a wireless communication
2 system comprising:

3 providing an interrogator having a housing and at least one
4 communication station remotely located from housing;

5 receiving a return link wireless signal within the communication
6 station of the interrogator;

7 generating a return link communication signal within the
8 communication station corresponding to the return link wireless signal;

9 communicating the return link communication signal from the
10 communication station using communication circuitry; and

11 receiving the return link communication signal within the housing
12 from the communication circuitry.

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14 32. The method according to claim 31 further comprising
15 amplifying the return link communication signal before the
16 communicating the return link communication signal.

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18 33. The method according to claim 31 further comprising
19 adjusting at least one characteristic of the return link communication
20 signal after the receiving the return link communication signal.

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22 34. The method according to claim 33 wherein the adjusting
23 provides a return link communication signal having a substantially
24 constant level.

1 35. The method according to claim 33 wherein the adjusting
2 comprises adjusting using automatic gain control circuitry.

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4 36. The method according to claim 31 wherein the providing
5 comprises providing a plurality of communication stations remotely
6 located from the housing, and the communication stations individually
7 receive return link wireless signals within one of a plurality of
8 communication ranges.

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10 37. The method according to claim 31 further comprising
11 processing the return link communication signal after the receiving the
12 return link communication signal.